WHAT IS CLAIMED IS :

1. Method for forming piezoelectric/electrostrictive film element at low temperature using electrophoretic deposition, the method comprising the steps of :

A) preparing a solution or a dispersed mixture containing constituent ceramic elements by dissolving or dispersing the raw material of constituent ceramic elements in a solvent or a dispersion medium;

B) preparing a mixed solution by adding citric acid into said solution or said dispersed mixture in which said constituent ceramic elements are dissolved or dispersed;

C) getting ultrafine ceramic oxide powder of particle size less than 1 μm with uniform particle diameter size distribution by forming ceramic oxide without scattering over, by nonexplosive oxidative-reductive combustion reaction by thermally treating said mixed solution at 100-500°C;

D) preparing a suspension by dispersing said ultrafine ceramic oxide powder in an organic dispersant;

E) preparing ceramic sol solution by dissolving constituent ceramic elements of same or similar constituent with said ultrafine ceramic oxide powder in water or an organic solvent;

F) dispersing by mixing said suspension in which said ultrafine ceramic oxide powder is dispersed with said ceramic sol solution;

G) forming a piezoelectric/electrostrictive film element by submerging a substrate into said suspension which said ultrafine ceramic oxide powder and said ceramic sol solution are mixed and then by performing electrophoretic deposition; and

H) thermally treating said piezoelectric/electrostrictive film element at 100-600°C ,

so that said solvent is removed by said thermal treatment and

the bonding among said ultrafine ceramic oxide powder particles is induced while said ceramic sol acts as a reaction medium on the surfaces of said ceramic oxide particles.

2. The method in Claim 1, further comprising the step of:

thermally treating said ultrafine ceramic oxide powder at 700-900°C before D).

3. The method in Claim 1 or Claim 2, further comprising the step of:

drying said piezoelectric/electrostrictive film between G) and H).

4. The method in Claim 3, wherein said piezoelectric/electrostrictive film is dried at 70-100°C.

5. The method in Claim 1 or Claim 2, wherein the particle size of said ultrafine ceramic oxide powder is 0.01-0.1 μm.

6. The method in Claim 1, wherein said substrate is made of metal, resinous polymeric organic compound, or ceramic.

7. The method in Claim 6, wherein said metal is nickel (Ni) or stainless steel.

8. The method in Claim 6, wherein said resinous polymeric organic compound is polyester, polyimide, or teflon-based resin.

9. The method in Claim 6, wherein said ceramic is alumina (Al_2O_3), zirconia (ZrO_2), silicon (Si), silicon carbide (SiC), silicon nitride (Si_3N_4), silicon dioxide (SiO_2), or glasses.

10. The method in Claim 1, wherein said ultrafine ceramic

oxide includes lead (Pb), zirconium (Zr) and titanium (Ti).

11. The method in Claim 10, wherein said ultrafine ceramic oxide is PZT, PMN or their solid solution (PZT-PMN) complex oxide.

12. The method in Claim 11, wherein said ceramic oxide powder further includes one or more element among nickel (Ni), lanthanum (La), barium (Ba), zinc (Zn), lithium (Li), cobalt (Co), cadmium (Cd), cerium (Ce), chromium (Cr), antimony (Sb), iron (Fe), yttrium (Y), tantalum (Ta), tungsten (W), strontium (Sr), calcium (Ca), bismuth (Bi), tin (Sn) and manganese (Mn).

13. The method in Claim 1, wherein said organic dispersion medium in which said ultrafine ceramic oxide powder is dispersed is alcohols or acetones.

14. The method in Claim 1, wherein the content of said organic dispersant is 1-500 ml per gram of the ultrafine ceramic oxide powder which is dispersed.

15. The method in Claim 1, wherein said organic solvent which is a base of said ceramic sol solution is acetic acid, dimethyl formamide, methoxyethanol, alcohols, or glycols.

16. The method in Claim 1, wherein the content of said ceramic sol solution is 1-500 parts by weight based on the weight of said ceramic oxide powder when said suspension of said ultrafine ceramic oxide powder and said ceramic sol solution are mixed.

17. The method in Claim 1, wherein the thickness of said piezoelectric/electrostrictive film element is 1-100 μm.

18. The method in Claim 17, wherein the thickness of said piezoelectric/electrostrictive film element is 5-30 μm.